82/14 82/11.1
82-14

RAILROAD SHOP EQUIPMENT

Bulletin 1400

FARREL **BETTS**®	Farrel-Betts Diesel-wheel borers • car-wheel borers • center-drive axle lathes	See pages 4 and 5
FARREL **SELLERS**®	Farrel-Sellers tracer-control wheel lathes • tracer control end-drive axle and journal lathes • end-drive automated hydraulic burnishing lathes • car-axle recentering machines • dual end-drive journal-truing and axle lathes	See pages 5 to 7
FARREL **WATSON STILLMAN**®	Farrel Watson-Stillman scrap shears • mounting and demounting wheel presses • rail benders • bushing, armature and flanging presses • pit jacks	See pages 8 to 11

FARREL-BIRMINGHAM COMPANY, INC. • CONSOLIDATED MACHINE TOOL DIVISION

82/11.1

ENGINEERING PROGRESS

To most railroad men, the line of shop equipment described and illustrated in this bulletin requires no introduction. Machines bearing the century-old names of Betts, Sellers and Watson-Stillman are in use throughout the world.

With the addition to the nameplates of another century-old name — FARREL — far-reaching improvements have been effected in the designs of the equipment. Accuracy has been raised, setup has been simplified, and speeds have been increased. Reliability, always an outstanding feature of this equipment, has been maintained.

Where required, most of the wheel and axle machines can be equipped with automatic loading and unloading devices, and transfer and measuring systems. Furthermore, any one of these machines can be arranged to operate in sequence with one or more of the others to improve accuracy and operating efficiency.

Carrying automation still further, the company has engineered and built the first completely automated wheel shop, which is diagrammed at the right, for machining and assembling railroad car wheels and axles.

Diagram of the first completely automated wheel shop

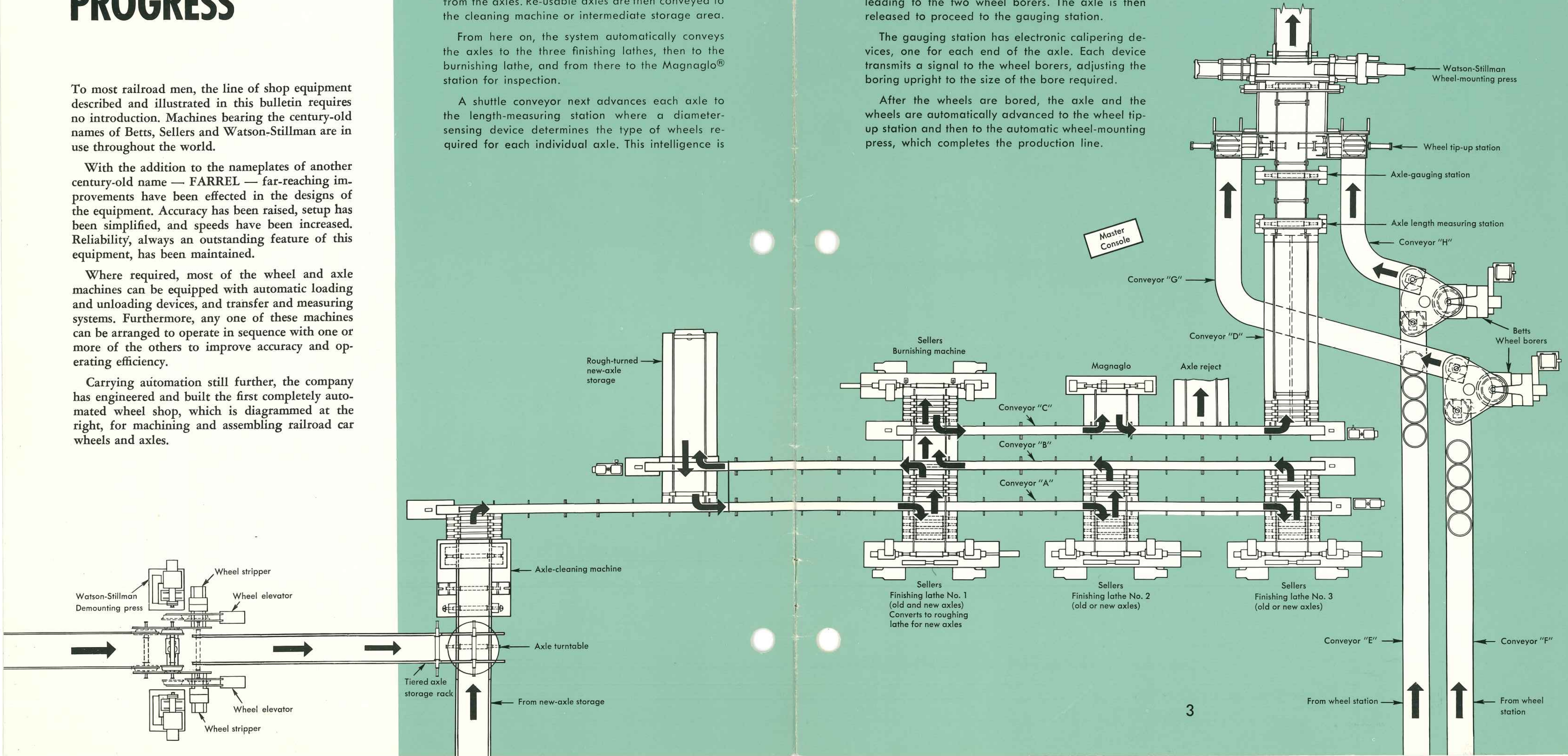
In this automated shop, wheel sets are delivered to the demounting press, where the wheels are stripped from the axles. Re-usable axles are then conveyed to the cleaning machine or intermediate storage area.

From here on, the system automatically conveys the axles to the three finishing lathes, then to the burnishing lathe, and from there to the Magnaglo® station for inspection.

A shuttle conveyor next advances each axle to the length-measuring station where a diameter-sensing device determines the type of wheels required for each individual axle. This intelligence is transmitted to the wheel loader, and two wheels, of the proper classification, are loaded on conveyors leading to the two wheel borers. The axle is then released to proceed to the gauging station.

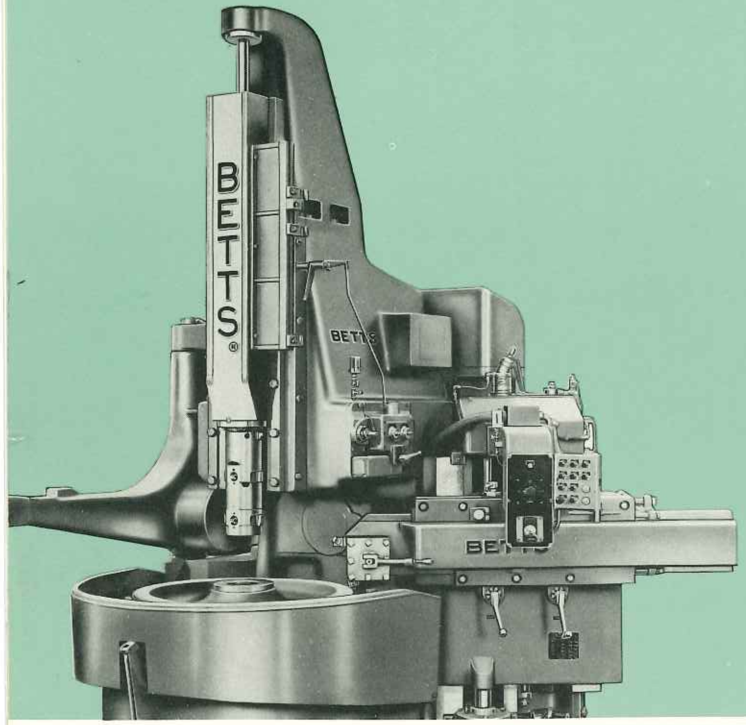
The gauging station has electronic calipering devices, one for each end of the axle. Each device transmits a signal to the wheel borers, adjusting the boring upright to the size of the bore required.

After the wheels are bored, the axle and the wheels are automatically advanced to the wheel tip-up station and then to the automatic wheel-mounting press, which completes the production line.



FARREL
BETTS

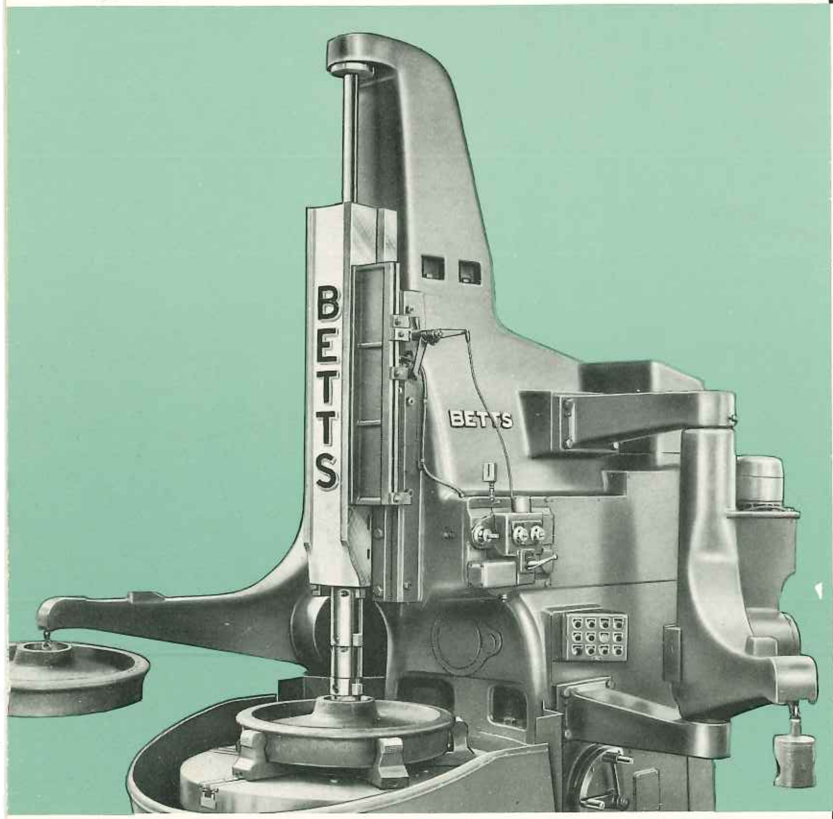
RAILROAD SHOP EQUIPMENT



FARREL-BETTS DIESEL-WHEEL BORER — This versatile machine will perform eight different operations — all with great accuracy. It will rough-bore, finish-bore and chamfer in a fast, continuous cycle. It will face and turn both sides of the hub and face the flange side of the wheel rim. The hub-boring operation is automatic.

Electronic control of the hydraulic-feed side head permits the operator to dial direction as well as rate of either feed or traverse — with no stopping to shift gears in between. Hence, transfer from vertical to horizontal feed, or vice versa, is a smooth, continuous movement, with no tool drag in the large radii.

The machine is equally efficient for machining passenger-car and freight-car wheels.



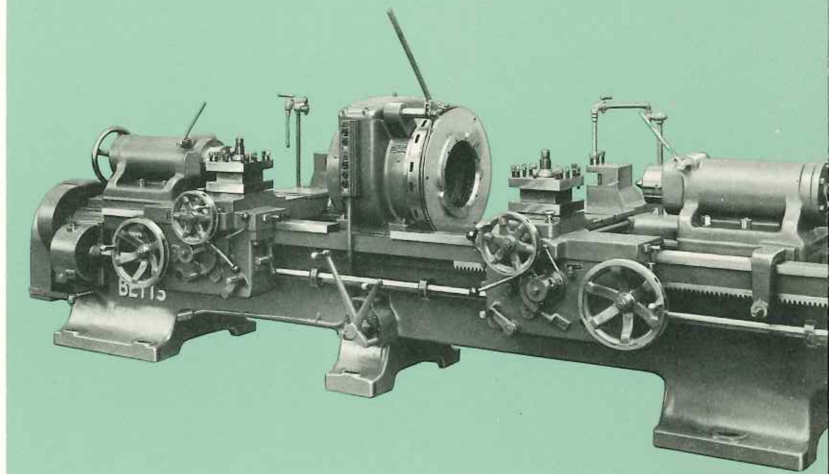
FARREL-BETTS CAR-WHEEL BORER — Here is a machine that is designed for fast, accurate boring. The wheel is automatically centered and chucked, and the boring operation is fully automatic from start to finish. A hub-facing attachment, for either hydraulic or manual operation, can be supplied as extra equipment.

The machine can be equipped with either one or two pneumatic or electric wheel hoists, or the entire operation, including loading and unloading, can be completely automated. When the latter is specified, the wheels are loaded, chucked, rough-bored, finish-bored, chamfered, and delivered to an outgoing conveyor — all automatically.

FARREL
SELLERS

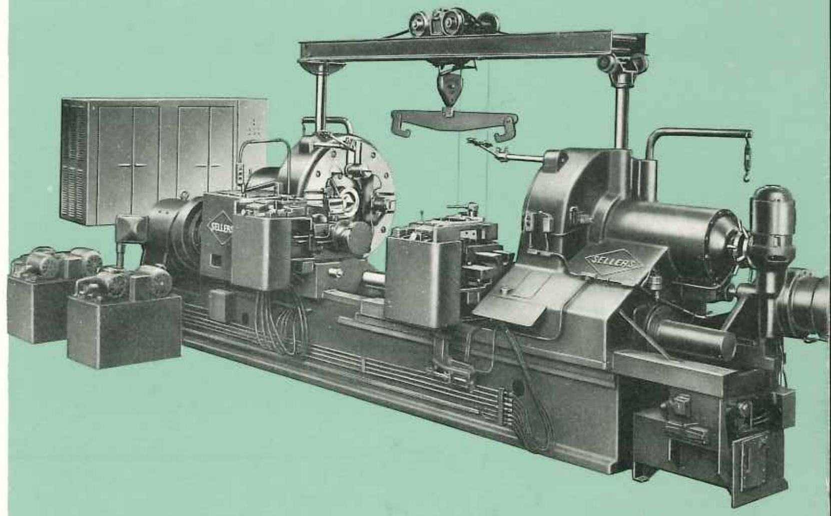
FARREL-BETTS CENTER-DRIVE AXLE LATHE — Designed for heavy-duty service, this lathe is a simple, rugged machine without complicated operating mechanisms. It is built for fast, accurate turning and burnishing of journals, and for turning wheel fits on standard AAR car axles from 4¼″ x 8″ up to and including 6½″ x 12″. Every provision has been made to assure accurate production with convenience of operation and control.

Suitable work speeds are provided for turning with either high-speed steel or tungsten carbide tools. An automatic, self-centering chuck, that closes automatically when the machine is started, can be supplied as an extra.

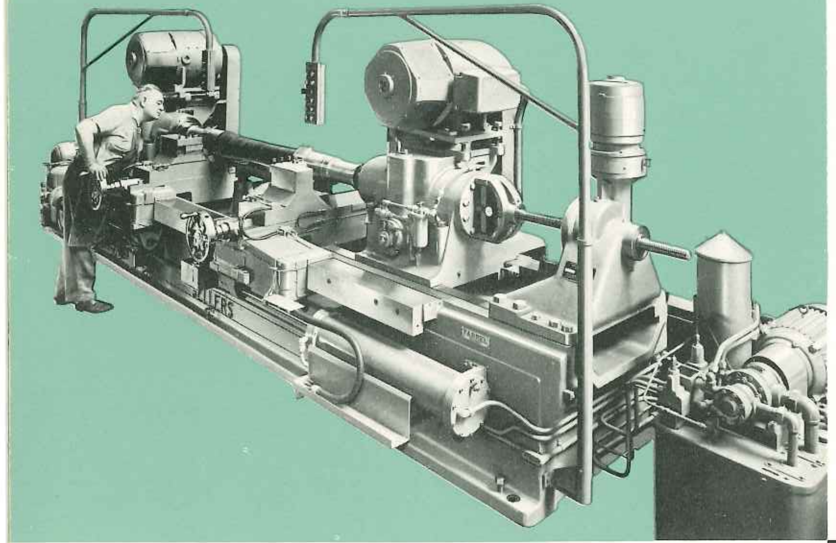


FARREL-SELLERS TRACER-CONTROL WHEEL LATHE — This dual-end machine is fast, easy to set up and easy to operate. The contouring cycle is virtually automatic, regardless of type or condition of wheels to be turned. Simple controls on each head, close to the operator's position, control the cutting tools; safety motion limits are provided for every direction. Templates for five different wheel types permit wheel contouring by the most direct, accurate and economical method. Average cycle time is less than 15 minutes.

Automatic hydraulic chucking makes setup smooth and easy; there is nothing to adjust. Hydraulic driving dogs equalize pressure and eliminate distortion. Permanently mounted calipers cut setup time approximately one-third because wheels do not have to be taped. Cylinder-type feed eliminates possibility of backlash.



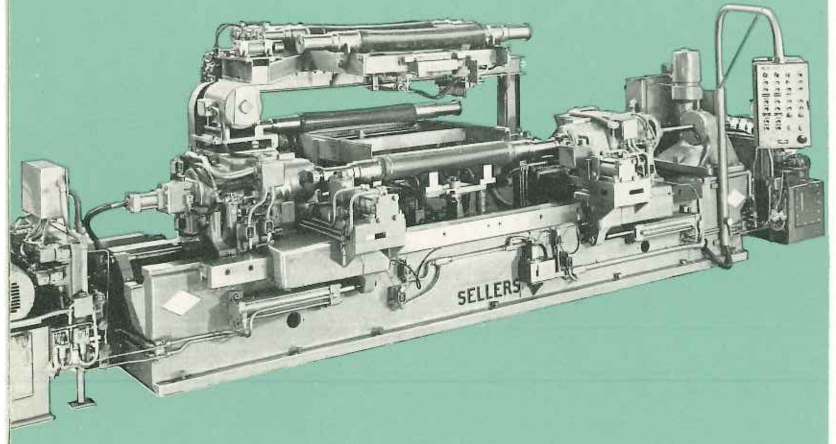
RAILROAD SHOP EQUIPMENT



FARREL-SELLERS TRACER-CONTROL END-DRIVE AXLE AND JOURNAL LATHE — This machine features tracer control with hydraulic feed. Production is high because setup is fast, operation is easy, and the axle does not have to be turned end for end to finish it. The two carriages cut opposite axle ends simultaneously. The machine handles any axle, with friction or antifriction bearings.

Chucking arrangement permits rolling the axle into and out of the lathe without interference, or straight through, if desired. Tracer control can be switched off, if not required.

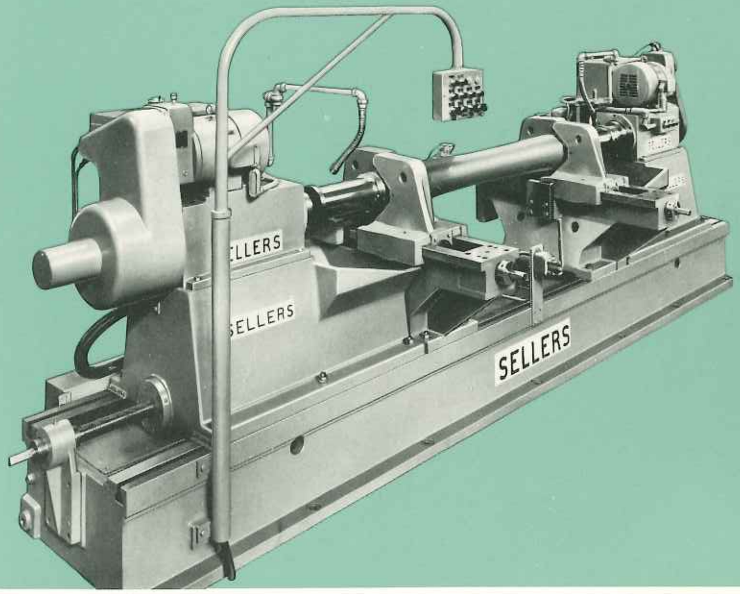
The machine has sufficient swing to true up and burnish outside journals of mounted wheel sets having wheel-tread diameters up to 46″. Equalized-pressure, opposed-type burnishing rolls are provided.



FARREL-SELLERS AUTOMATED HYDRAULIC BURNISHING LATHE — Of simple, advanced design, this is a single-purpose machine built for burnishing journals, dust-guard seats and end collars of standard AAR car axles. Ruggedly constructed, it provides dependable productive service at low cost.

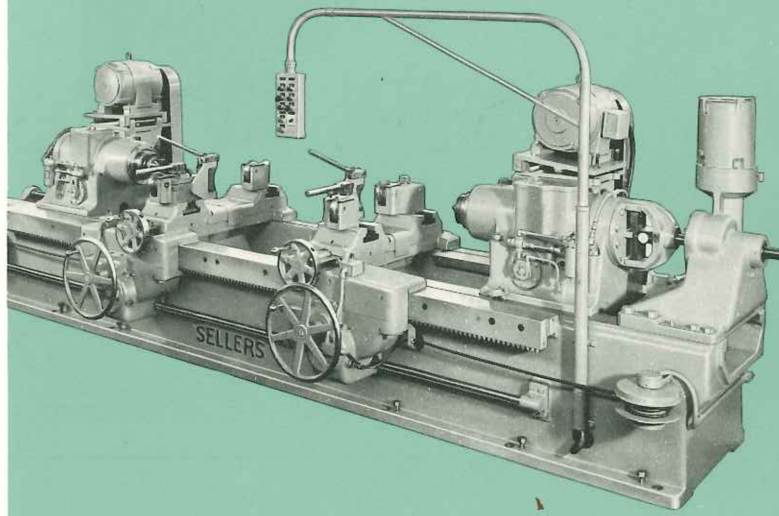
Provision can be made for automatic loading and unloading of axles, as shown in the photograph. When so equipped, operation of the machine can be completely automated.

FARREL-SELLERS CAR-AXLE RECENTERING MACHINE — This machine is designed and built to handle all standard AAR car axles. The recentering tools are carried in revolving spindles mounted in antifriction bearings. Large diameter quills slide through solid bearings, both front and rear, giving maximum rigidity and accuracy to the revolving cutter.

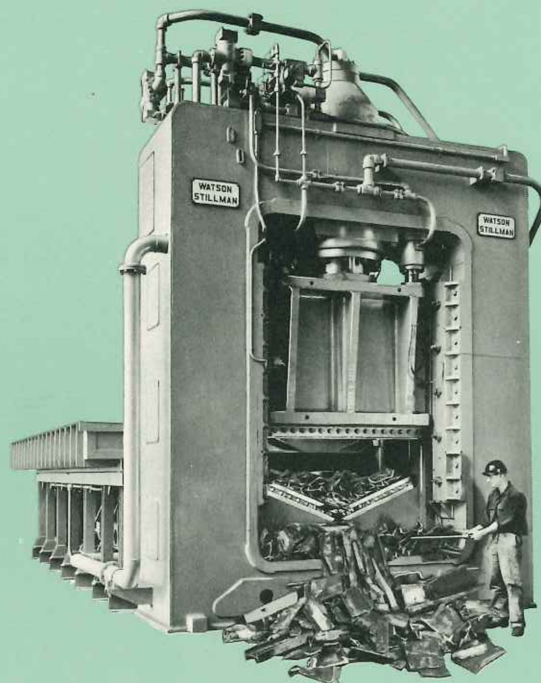


FARREL-SELLERS DUAL END-DRIVE JOURNAL-TRUING AND AXLE LATHE — Designed for finishing and burnishing bare axles and journals of mounted wheel sets, this lathe has a speed range suitable for carbide tooling. It will rough-turn, finish-turn and burnish outside journals on mounted wheel sets having wheel-tread diameters up to 46″. No filler blocks are required when going from bare axle to mounted wheel set.

Because both carriages can be operated between wheels, a third carriage is not required for turning inside journals. Wheel sets never have to be turned around. The machine is both fast and accurate.



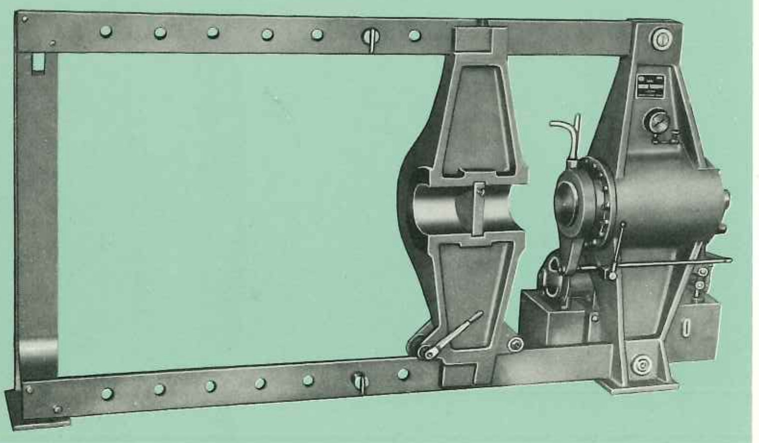
RAILROAD SHOP EQUIPMENT



FARREL WATSON-STILLMAN SCRAP SHEAR —This machine combines economy of operation with increased output in processing various kinds of scrap. Arranged for manual and semi-automatic operation, all movements are controlled by push buttons from the operator's station.

Only three men are needed for the job — one to run the shear, one to operate a crane, and one to watch for objectionable material in loading. Because of the small force required, labor costs can be reduced by as much as 75%.

The shear is available in three different capacities — 350, 750 and 900 tons. This provides a choice of sizes to meet almost any requirement.

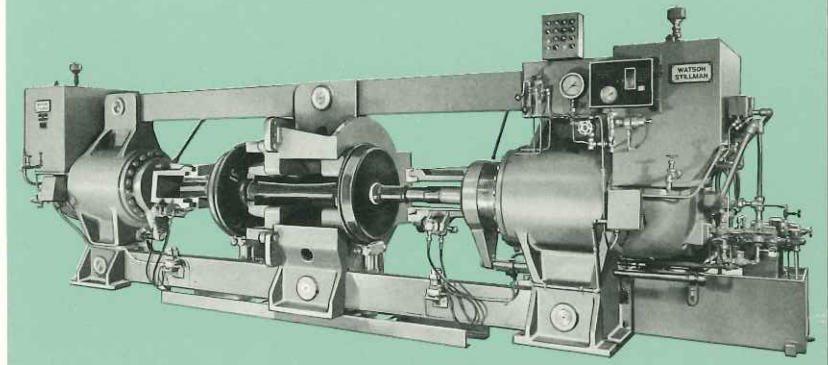


FARREL WATSON-STILLMAN STANDARD WHEEL PRESS—Furnished in the high-speed, oil-operated, inclined type, the design of this press represents the latest development in general-purpose machines for forcing wheels on or off axles. A complete range of sizes, in capacities from 100 to 800 tons, is available for handling locomotive-driver and car wheels. Completely hydraulic, the design simplicity of the press reduces maintenance to a minimum.

A mounting yoke, suspended on a chain is supplied as standard equipment. Adjustable sling hooks, suspended from rollers, and special resistance beams can be furnished as optional equipment. The latter admit roller-bearing assemblies of Diesel wheels or Spicer generator drive of passenger-car wheel sets. Other special beams are available with yoke so that Diesel wheel sets with driving gear can be demounted without disturbing the gear.

FARREL WATSON-STILLMAN DOUBLE-END DEMOUNTING PRESS — A high-speed machine of the oil-operated, inclined type, this design represents the latest development in general-purpose wheel presses. Completely hydraulic, it will handle wheel sets having axles from 4¼″ x 8″ up to 6″ x 11″.

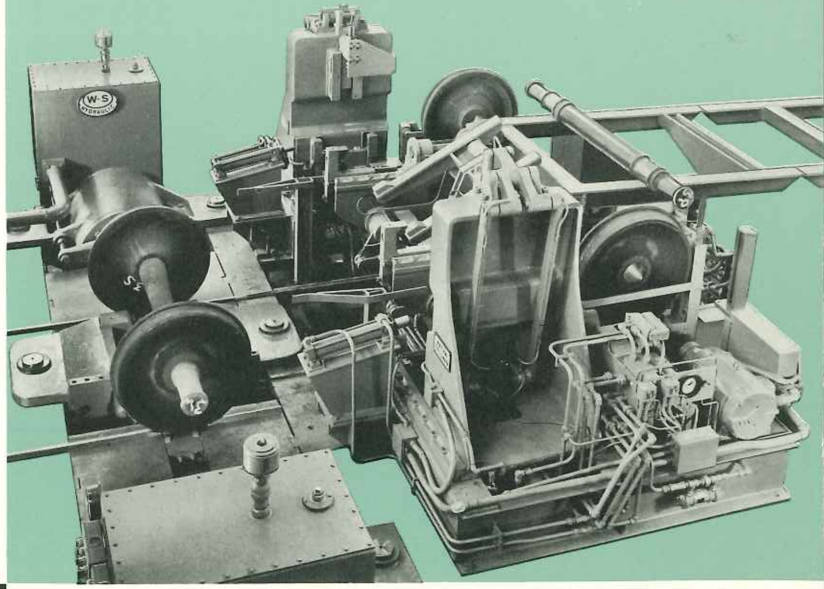
Many other variations of standard wheel presses can be furnished to suit special production and operating requirements.



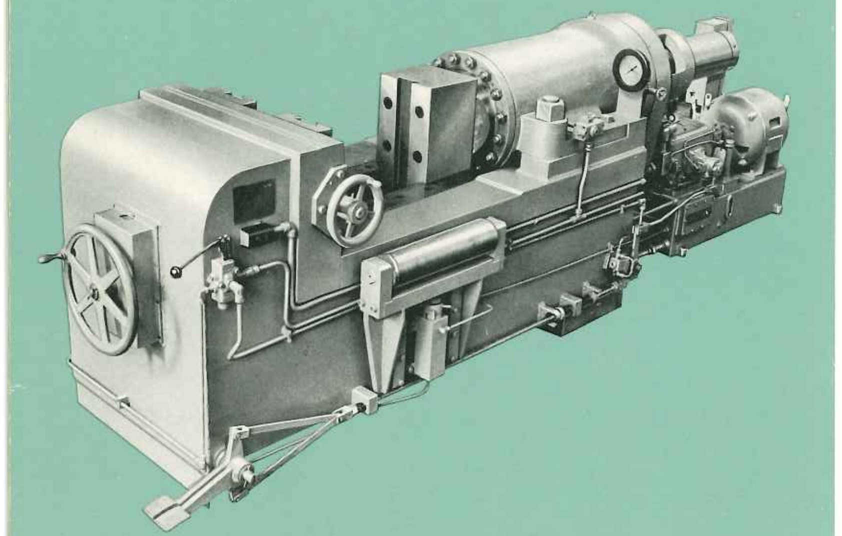
FARREL WATSON-STILLMAN AUTOMATED MOUNTING AND DEMOUNTING PRESSES —These machines are designed to eliminate all manual handling of wheels or axles during the operating cycle. They will handle all standard sizes of freight-car and passenger-car wheel sets.

The automated demounting press, shown in the illustration at the right, demounts the wheels, strips them from the axle, and then directs wheels and axle to appropriate conveyors — all by automatic control. With the transfer units forming an integral part of the press, this is the fastest wheel-handling equipment available today.

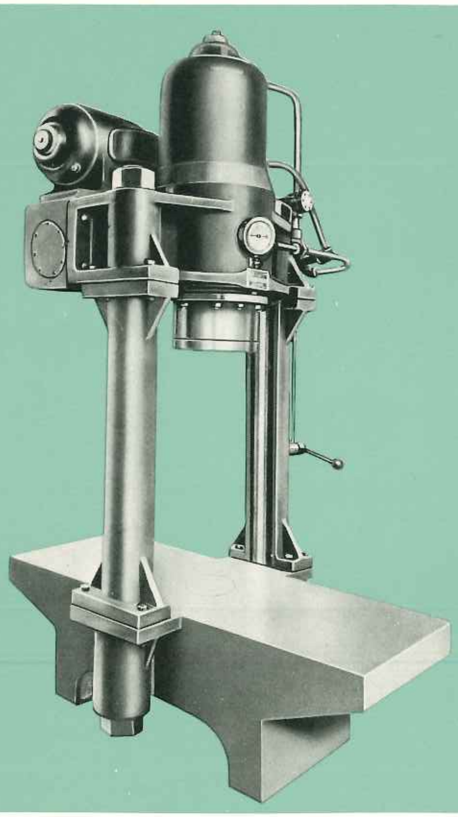
The automated mounting press is arranged for completely automatic operation. This includes the feeding of wheels into the press and discharge of the mounted sets.



RAILROAD SHOP EQUIPMENT



FARREL WATSON-STILLMAN RAIL BENDER — Of the horizontal bulldozer type, this machine is used for bending and straightening structural steel shapes, standard railroad rails, frogs, switches, etc. Features include remote adjustment, positive stops, and hand-lever, foot-switch and semi-automatic cycle control. This machine is available in capacities from 50 to 500 tons.



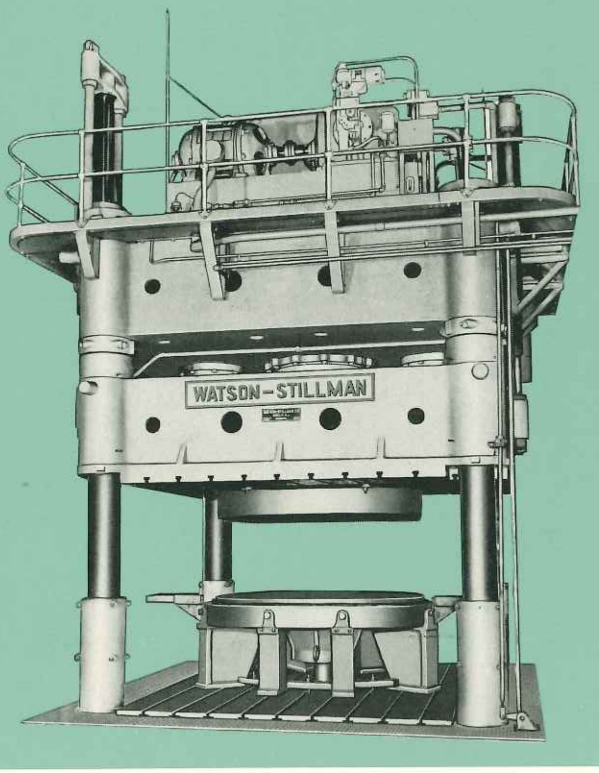
FARREL WATSON-STILLMAN BUSHING AND ARMATURE PRESSES — These are self-contained hydraulic presses, designed specifically for use in railroad shops.

The bushing press, illustrated at the left, is used for inserting or removing connecting-rod bushings, driving-box brasses and for general straightening and bending operations. It is available either with a plain bed with round hole covered by a plate, as shown in the photograph, or with U-slot bed. Capacities range from 50 to 200 tons.

The armature press, not illustrated, is used to handle the removal and assembly of Diesel-locomotive armature shafts. Of four-column construction, the press is furnished complete with a spring-loaded dolly for transporting the armature into and out of pressing position.

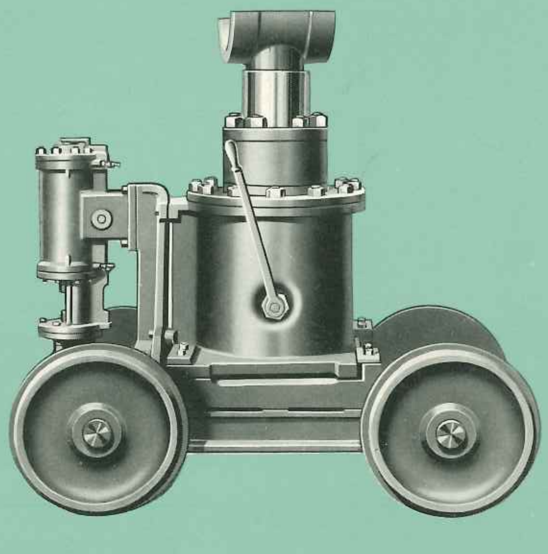
FARREL WATSON-STILLMAN FLANGING PRESS — This is a large-bed, medium-tonnage press for forming freight-car and passenger-car structural parts; box-car ends, end posts, and door sections; and braces for hopper and freight cars. It is available in capacities from 200 to 3000 tons.

The generous safety factors, accessibility to the working area, fast sensitive controls, and convenient installation and removal of dies make this an ideal press for the work for which it is designed. The platens are of heavy box design. The movable platen is fully guided on the four columns with split bronze bushings. The larger sizes can be furnished with three bottom cushion cylinders, which are independently adjustable for use as blank holders or knockout cylinders.



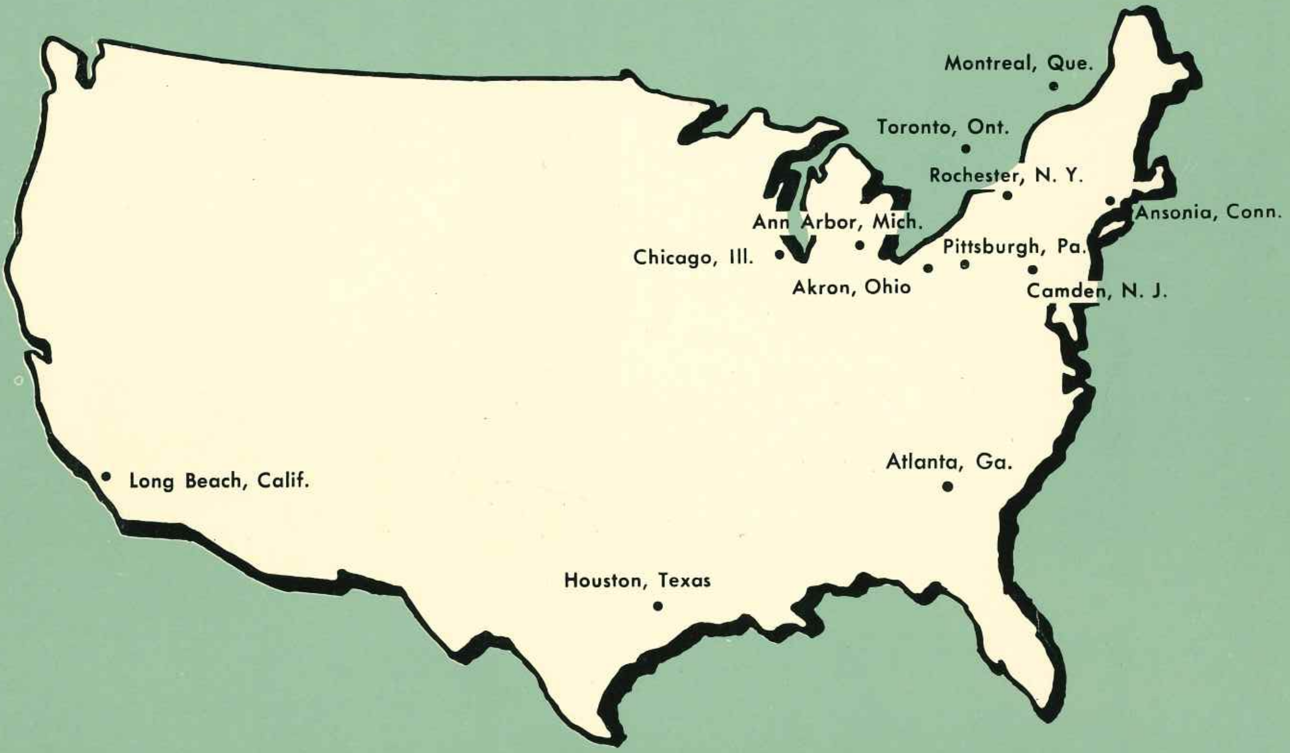
FARREL WATSON-STILLMAN PIT JACK — This jack is available in two types — with telescopic ram or with plain ram. The telescopic-ram type can be furnished for operation by a hydraulic double-plunger hand pump, that supplements the hydro-pneumatic pressure, or it can be driven by an air engine connected to the shop compressed-air line. The plain-ram type is available for hand-pump operation only. The plain-ram type requires a subpit to accommodate the extension of the cylinder.

Yoke castings are designed to fit axles. Wheels are large and are equipped with roller bearings to reduce starting friction. Pit jacks are available in capacities from 15 to 50 tons.



At your service

The Consolidated representative at any of the sales offices listed below will be glad to furnish you with additional information about any of the equipment described in this bulletin. Call him on your next modernization project. He is fully qualified by experience to analyze your requirements and recommend equipment that will help you meet your objectives.



FARREL-BIRMINGHAM COMPANY, INC.

CONSOLIDATED MACHINE TOOL DIVISION

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